

Rockwell, (A.D.)

## Locomotor Ataxia

Differentiated from Functional Conditions which Simulate it.

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BY

A. D. ROCKWELL, A. M., M. D.

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The contents of that number are as follows :

Original Communications.		
	PAGE	
On Some Points in the Anatomy and Physiology of the Brain, and their Practical Bearings. By <b>Ambrose L. Ranney</b> , M.D., etc.....	513	Mundé's Minor Surgical Gynæcology..... 585
Locomotor Ataxia differentiated from Functional Conditions which simulate it. By <b>A. D. Rockwell</b> , M.D., etc.....	546	Radford on Cæsarean Section, etc..... 588
The Physiology of the Visual Purple. By <b>William C. Ayres</b> , M.D.....	552	Flint's Practice of Medicine..... 589
Ventnor, Isle of Wight, and its Peculiar Advantages for the Invalid. By <b>W. Thornton Parker</b> , M.D., Plymouth, Mass.....	559	Landis's How to Use the Forceps..... 590
		Books and Pamphlets received..... 591
<b>Editorials.</b>		<b>Proceedings of Societies.</b>
The Secularization of Hospital Nursing in Paris.....	566	New York Society of German Physicians..... 593
<b>Special Articles.</b>		<b>Reports on the Progress of Medicine.</b>
Anæsthetics. By <b>Gaspar Griswold</b> , M.D., etc.....	568	Quarterly Report on Surgery. By <b>Charles B. Kelsey</b> , M.D., etc..... 598
<b>Reviews and Literary Notes.</b>		Quarterly Report on Dermatology. By <b>George Henry Fox</b> , M.D., etc..... 612
Fournier on Syphilis and Marriage.....	581	Quarterly Report on Orthopædic Surgery. By <b>Charles T. Poore</b> , M.D., etc..... 617
		<b>Miscellany.</b>
		The Accuracy of Clinical Thermometers..... 622
		Items..... 623
		Army Intelligence..... 623
		Marine-Hospital Service..... 624

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## LOCOMOTOR ATAXIA DIFFERENTIATED FROM FUNCTIONAL CONDITIONS WHICH SIMULATE IT.\*

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HOWEVER interesting the subject of progressive locomotor ataxia may be to the student of pathology, it is to the therapist uninviting, because unpromising. "One dislikes to bruise one's self against a wall." In the outset, therefore, let me say that I approach this topic with little enthusiasm. It is, on the contrary, quite certain that the great majority of cases of this disease, while often susceptible of alleviation, are quite incurable.

The astonishing affirmations concerning the curability of spinal sclerosis that were current in German literature a few years ago are far from being confirmed by later experience. The grouping of symptoms of many of the cases reported in no way indicated grave lesion of the cord, and in some cases were little more than typical illustrations of simple spinal irritation. In other cases of reported cures the symptoms presented were more in accordance with those observed in posterior spinal sclerosis. In these cases of recovery, of which quite a number have occurred in my own practice, it may be asserted, I think, without fear of contradiction, that serious structural changes in the cord did not exist. The distinction might very

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properly be made that they were cases of ataxia, but not of posterior spinal sclerosis. In consideration of this evident fact, the following interesting and important question is suggested: In cases presenting symptoms commonly supposed to be pathognomonic of posterior spinal sclerosis, is it possible to differentiate between structural and functional phenomena?

For some years it has been usual with me to give an unfavorable prognosis in *all* cases, but, at the same time, in recognition of the fact that recoveries have occasionally taken place, it seemed justifiable to recommend tentative treatment. If improvement up to a certain point follows and then permanently ceases, it is very probable that we have a case of locomotor ataxia with spinal sclerosis as the cause. If, however, the case be one of simple ataxia, simulating posterior spinal sclerosis, it becomes evident by progressive improvement up to complete recovery.

These occasional recoveries, in what at first sight seemed desperate cases, have led me to study with some care the various symptoms presented, in an endeavor to differentiate between organic and functional cases of locomotor ataxia. Previous to 1876 the cases of locomotor ataxia that came under my observation were not recorded with that accuracy of detail which would render them serviceable in the present inquiry. Since that time, however, every symptom has been noted with greater care, and the cases furnish, as it seems to me, some interesting data upon which to base conclusions.

CASE I.—Mr. C., aged forty-three, was first seen in 1876. The prominent symptoms were marked impairment of the power of coördination in walking, anæsthesia of the fingers and toes, inability to quickly touch with the finger any given point, as the nose or ear, decreased tactile sensibility, severe neuralgic pains in the legs, sexual power greatly impaired, increase of electro-muscular contractility, decrease in the rapidity of the transmission of sensation, inability to detect slight differences of weight, and absence of iridal reflex. Tendon reflex not tested. There was no sense of constriction around the abdomen. Treatment by general faradization and central galvanization resulted in very decided alleviation of pain, but in no permanent improvement. Four years later the patient died.

CASE II.—Mr. E., aged fifty, was seen in 1876, suffering from anæsthesia and very great incoördination of movement, that had existed for ten years. There were present, also, inability to touch a given point on the face by rapid movement (inaccuracy of touch), impaired tactile sensibility, pains of a diffused and intermittent character, impotence, increase of electro-muscular contractility, impaired rapidity of the transmission of sensation, with inability to distinguish slight differences in weight. The iridal and tendon reflexes were wanting, but there was no sensation of constriction around the abdomen. No form of treatment produced the slightest effect.

CASE III.—Mr. M. C., aged thirty-five, was seen in 1876, four years subse-



quent to the first symptoms of the disease, which were double vision and ptosis. The symptoms now present were incoördination, anæsthesia of the fingers and toes, inaccuracy of touch, impaired tactile sensibility, occasional fulgurating pains, impotence, and absence of both iridal and tendon reflex. There was no increase of electro-muscular contractility, no sense of abdominal stricture, no impairment of the rapidity of the transmission of sensation, and no special loss of power to distinguish slight differences in weight. General faradization was followed by some very pleasant effects in the way of relieving pain and restlessness, and to some extent dissipating the anæsthesia.

CASE IV.—Mr. S., aged forty-eight, stated that he was first annoyed by double vision in 1872, followed soon by symptoms of ataxia. When I saw him in 1877, the following symptoms were quite marked: incoördination and anæsthesia, inaccuracy of touch, impaired tactile sensibility, diminished sexual power, increase of electro-muscular contractility, absence of the iridal and tendon reflex. There was little if any pain, no sense of abdominal stricture, no impairment of the rapidity of the transmission of sensation, and no diminution in the power of distinguishing differences in weight. Treatment was followed by no special benefit.

CASE V.—Mr. M., aged fifty-five, came to me in 1877, having first observed some impairment of sight, with numbness of the fingers, some two years before, soon followed by incoördination of movement. Examination revealed the additional symptoms of inaccuracy of touch, fulgurating pains, slight loss of sexual power, sense of constriction around the abdomen, together with absence of the tendon reflex. There was also decrease in the rapidity of the transmission of sensation. The electro-muscular contractility was normal, as was also the iridal reflex. This patient received considerable benefit from treatment, the electric brush especially rendering the extremities less anæsthetic, and appreciably improving locomotion for the time being.

CASE VI.—Mr. H., aged thirty, came to me in 1878, stating that, eighteen months before, his attention was called to some weakness of the legs and numbness of the toes, followed by incoördination of movement. The additional symptoms were inaccuracy of touch, fulgurating pains of no great severity, slight sexual impairment, increase of electro-muscular contractility, and a feeling of abdominal constriction. There was no impairment of tactile sensibility and no impairment of the rapidity of transmission of sensation. Both the iridal and the tendon reflex were present, and the patient was quite able to distinguish slight differences in weight. General faradization was followed by a decided decrease of the anæsthesia, by increased strength, and improved sleep and appetite.

CASE VII.—Mrs. S., aged forty-two, complained, in the beginning of 1876, of anæsthesia in the fingers, subsequently of numbness of the toes, followed in a few months by symptoms of incoördination. Three years after, she came to me with these additional symptoms: inaccuracy of touch, impaired tactile sensibility, absence of the iridal and tendon reflex. On the other hand, she suffered only a very little pain, the electro-muscular contractility was normal, there was no abdominal constriction, sensation was transmitted with normal rapidity, and there was a good appreciation of differences in weight. No appreciable benefit resulted from a short course of treatment.

CASE VIII.—Mr. W., aged sixty, came to me in 1878 with symptoms that had begun less than a year previously. He was suffering from incoördination of movement, marked anæsthesia, and some impairment of vision. There were also



inaccuracy of touch, impaired tactile sensibility, impotence almost complete, together with absence of both the reflexes—iridal and tendon. The pains were insignificant and not fulgurating in character. Electro-muscular contractility was normal, with no abdominal constriction, no impairment of the rapidity of the transmission of sensation or of the sense of weight. No treatment was of the slightest service, and the patient died within thirty months from the first decided manifestation of the disease.

CASE IX.—Mr. D., aged about fifty, was seen in 1879. For some two years he had complained of unsteadiness of gait, with anæsthesia. Submitted to the usual tests, he was found to be incapable of touching his nose or ear by rapid movement of his finger, while the rapidity of the transmission of sensation was much impaired. He was unable to distinguish slight differences in weight, and the tendon reflex was absent. The iridal reflex, on the contrary, was normally active, the sexual impairment was slight, electro-muscular contractility was normal, and there was no abdominal constriction. Severe fulgurating pains were almost constant. The pain, as well as the numbness, was greatly relieved by general faradization and the use of the electric brush, so that there was an appreciable improvement in the steadiness of locomotion.

CASE X.—Mr. F., aged fifty-three. In 1875 he became conscious of some numbness of the feet, and observed that in stepping into a carriage it was difficult for him to put his feet directly on the step. He complained also of double vision, and when I saw him in 1880 the incoördination of movement had become aggravated. Additional symptoms were inaccuracy of touch, impaired tactile sensibility, impaired sexual power, increase of electro-muscular contractility, decrease in the rapidity of the transmission of sensation, and in appreciation of differences in weight. Both the iridal and tendon reflex were abolished. The pain was of a dull aching character, not sharp and shooting. There was no feeling of abdominal constriction. Insomnia, a symptom unusually persistent and distressing in this case, was almost entirely relieved by general faradization. Pain also was much mitigated, as well as the anæsthesia, and a feeling of heaviness and stiffness in the legs.

CASE XI.—Mr. R., aged forty-one, was seen in February, 1880. Six months previous to this time his health had been fair, but in July he began to complain of pain and to walk badly. Examination revealed inaccuracy of touch, decrease in the rapidity of the transmission of sensation, inability to distinguish slight differences in weight, and abolition of the iridal and tendon reflex. Pains were present, but not of a marked fulgurating character, and the sexual power was only slightly impaired. There was no increase of electro-muscular contractility, and no sense of abdominal constriction. But little if any benefit followed treatment.

CASE XII.—Mr. P., aged forty-nine, came to me in 1877 with the following history: He had all his life enjoyed perfect health, until prostrated by typhoid fever on two occasions during the late civil war. After these attacks he did not enjoy the same degree of vigor as before. Four years ago, while walking the street, he became conscious of a disagreeable chilly sensation, which annoyed him more or less for some months. This was followed by a severe itching sensation in the breast and arms, but accompanied by no eruptions. This itching was persistent until, after taking an electrical bath, water-blisters appeared on the surface and the itching disappeared. In 1875 he observed some incoördination of movement, which gradually increased in severity until it was characteristic of an



advanced case of posterior spinal sclerosis. In addition to this symptom, he was suffering at the time of my examination from a great heaviness of the limbs, some anæsthesia of the fingers and toes, complete loss of sexual power, together with more or less pain of a shooting character. He was readily able to touch any point on the face or forehead by rapid movement, and could distinguish slight differences in weight as quickly as any one. The electro-muscular contractility was normal, but the patient complained of a painful sensation of constriction around the abdomen. There was no impairment of the rapidity with which sensation was transmitted, and no inability to distinguish slight differences in weight, while both the iridal and tendon reflex were readily elicited. From August 26th to October 22d the patient was submitted to tri-weekly séances of electrization, mainly by the method of general faradization. He improved from week to week, and a year ago, when last seen, was in a condition of approximate health. His movements were perfectly coördinated, he suffered no pain, the anæsthesia was no longer appreciable, and his sexual organs had regained much of their original tone.

CASE XIII.—Mr. L., aged thirty-six, presented himself in February, 1879, with well-marked incoördination of movement, dating back some eight months. About a year before, he had suffered much from insomnia, and had been treated for cerebral hyperæmia, but the insomnia continued. In addition to these symptoms, my examination revealed the fact that his sexual power was much impaired, and that he suffered considerably from anæsthesia and aching and sometimes darting pains, not only in the limbs but in various parts of the body. He could, on the contrary, easily touch any point on the face or forehead, however rapid his movement might be, and with normal accuracy could distinguish between differences in weight. The iridal and tendon reflexes were both normally present. This patient quite rapidly improved under the combined influence of general faradization and central galvanization up to complete recovery.

CASE XIV.—Mr. R., aged twenty-eight, came to me in December, 1880, suffering from marked incoördination of movement, insomnia, greatly impaired sexual power, neuralgia (more general, however, than local in character), together with a very great degree of physical and mental depression. These symptoms had existed nearly a year, and followed a dissipated career. He did not complain of anæsthesia, and responded affirmatively to the test of touching a given point on the face by rapid movement and in reference to distinguishing slight differences in weight. Sensation was transmitted with normal rapidity, and the iridal and tendon reflex were readily elicited. Under the influence of general faradization and central galvanization, this patient approximately recovered within six weeks.

It will be observed that, of the foregoing fourteen cases, eleven proved incurable, although in most of them more or less alleviation of symptoms followed treatment. The last three patients recovered. In analyzing the whole number, we find that incoördination of movement, pain, and loss or impairment of sexual power were present in all. Anæsthesia was a symptom of all the incurable and of two out of the three curable cases. *Inability to touch a given point on the face (as the nose or ear) by a rapid movement of the hand prevailed in all the incurable, but in none of the curable cases.* Im-



paired tactile sensibility was present in seven of the incurable, but in none of the curable cases. Impairment or absolute loss of sexual power prevailed throughout the whole number. Electro-muscular contractility was increased in five of the incurable cases; normal in the remainder, curable and incurable. Sensation of constriction around the abdomen was noted in but four of the incurable and in one of the curable cases. The rapidity with which sensation was transmitted was impaired in six of the incurable cases, but normal in all the rest. Inability to distinguish between slight differences in weight was observed in six of the incurable cases only. The iridal reflex was abolished in eight, and the tendon reflex in ten of the incurable cases, but both were readily elicited in the three curable cases.

It is a fact that cases similar to my last three have not unfrequently been confounded with posterior spinal sclerosis, but, if the experience above recorded can be taken as in some measure a guide, it would seem to be no very difficult matter to distinguish between the manifestations of this grave disease and the functional symptoms which so closely simulate it. We can not, manifestly, depend on any one symptom, and perhaps not on any single grouping of symptoms. Although, in the enumeration here given, it will be observed that inability to touch a given point on the face was characteristic of all the grave cases, and absent in all the curable ones, yet there may be cases involving only the lower part of the cord, in which this symptom does not appear throughout the course of the disease. This limitation, however, I believe to be exceedingly rare. In the second stage of locomotor ataxia, anæsthesia of the tips of the fingers, together with inaccuracy of touch, almost invariably exists, showing disease of the upper portion of the cord. As, therefore, this inability to readily touch a given point on the face by rapid movement is so uniformly observed in posterior spinal sclerosis, and is seldom if ever found in cases simulating the same, it may be regarded as one of the most, if not the most, valuable accessory diagnostic sign.

Abolition of the tendon reflex and absence of the iridal reflex are also most important symptoms, since in curable cases these phenomena are seldom if ever wanting. On the contrary, neither impaired sexual strength nor the sense of abdominal constriction is of much value, because they are so common to other conditions; nor should I be inclined to attach great importance to ocular troubles, except in conjunction with more important symptoms. Incoördination of movement is perhaps the only symptom, subsequent to the full development of the disease, which may not occasionally be ab-



solutely wanting. Unfortunately, however, for its value as a single diagnostic symptom, it is *the one* symptom through which functional has been so readily mistaken for organic disease. Pains of a fulgurating character generally precede ataxic symptoms, but not always, and for months and even years the patient may be quite free from more than transient and vague pains.

While, therefore, I believe that in some cases, in which certain of the above-mentioned prominent symptoms co-exist, posterior spinal sclerosis, in its pre-ataxic stage, may be predicted with some certainty, in many, and perhaps the majority of instances, such predictions are as likely as not to be unfulfilled. In the second stage, however, or after the appearance of ataxic symptoms, it is not very difficult to distinguish between structural and functional causes.

Need I add, how important it is to the present comfort and to the future of the patient, that a correct diagnosis be made, and that a functional and curable disease be not mistaken for an organic and incurable one? As regards the electro-therapeutics of this disease (and, however unsatisfactory it may be, it affords quicker and more permanent relief than other methods), I am led, by an experience much larger than is indicated by the cases here specially collated, to insist upon thoroughness of treatment. General faradization will accomplish much more than local applications of either current, and in many and perhaps the majority of cases of posterior spinal sclerosis will be followed by more or less alleviation. In the not very infrequent and persistent condition simulating sclerosis it acts rapidly and effectively.







